

WHAT IS CLAIMED IS:

1. An optical film comprising:

a transparent film;

an adhesive layer provided on one surface of said

5 transparent film, said adhesive layer having a refractive index different by 0.1 or less from a refractive index of a layer of said one surface of said transparent film; and

10 a repetitive prismatic structure provided on the other surface of said transparent film, said repetitive prismatic structure having optical path changing slopes aligned in a substantially constant direction at an inclination angle in a range of from 35 to 48 degrees with respect to a plane of said transparent film.

15 2. An optical film according to claim 1, wherein said optical path changing slopes are constituted by at least two kinds of slopes in which one kind of slopes aligned in a substantially constant direction serve as a reference while the other kind of slopes are aligned substantially in a direction
20 which is opposite to said one kind of slopes; and wherein said adhesive layer is covered with a strip sheet.

3. An optical film according to claim 1, wherein said inclination angle of each of said optical path changing slopes
25 with respect to said film plane is in a range of from 38 to

45 degrees.

4. An optical film according to claim 1, wherein said optical path changing slopes are formed based on a structure of grooves each shaped substantially like an isosceles triangle or any other triangle in section.

5. An optical film according to claim 1, wherein said optical path changing slopes are formed based on a structure of grooves or protrusions each shaped substantially like a tetragon or a pentagon in section.

6. An optical film according to claim 1, wherein a projected area, onto said film plane, of flat surfaces each having an inclination angle of not larger than 5 degrees with respect to said film plane is not smaller than 10 times as large as a projected area, onto said film plane, of slopes each having an inclination angle of not smaller than 35 degrees with respect to said film plane.

20

7. An optical film according to claim 1, wherein said prismatic structure includes optical path changing slopes each having an inclination angle in a range of from 38 to 45 degrees with respect to said film plane, and flat surfaces each having an inclination angle of not larger than 5 degrees with respect

to said film plane; wherein a projected width of each of said flat surfaces onto said film plane is not smaller than 10 times as large as a projected width of each of said optical path changing slopes onto said film plane; and wherein said prismatic structure is formed into continuous grooves each of which is shaped substantially like a triangle in section and each of which is extended from one end of said film to the other end thereof.

8. An optical film according to claim 1, wherein said prismatic structure having optical path changing slopes is formed into discontinuous grooves each shaped substantially like polygon such as a triangle, a tetragon, a pentagon in section; wherein a length of each of said discontinuous grooves is not smaller than five times as large as a depth of each of said discontinuous grooves; wherein said optical path changing slopes are formed in a direction of the length of said grooves at an inclination angle in a range of from 38 to 45 degrees with respect to said film plane; and wherein a projected area of said discontinuous grooves onto an area of said film plane is not larger than 10%.

9. An optical film according to claim 1, wherein a reflection layer is disposed closely on a surface of said film on which said prismatic structure having said optical path changing slopes is formed.

10. An optical film according to claim 1, wherein
ridgelines of said optical path changing slopes are parallel
to or inclined within an angle range of ± 30 degrees with respect
5 to one side of said transparent film.

11. An optical film according to claim 1, wherein said
adhesive layer is of a light diffusion type.

10 12. An optical film comprising:
a transparent film having a refractive index of not lower
than 1.49;

transparent adhesive means provided on one surface of
said transparent film, said transparent adhesive means having
15 a refractive index of not lower than 1.49; and

a repetitive prismatic structure provided on the other
surface of said transparent film, said repetitive prismatic
structure having optical path changing slopes aligned in a
substantially constant direction at an inclination angle in
20 a range of from 35 to 48 degrees with respect to a plane of
said transparent film.

13. An optical film according to claim 12, wherein said
optical path changing slopes are constituted by at least two
25 kinds of slopes in which one kind of slopes aligned in a

substantially constant direction serve as a reference while the other kind of slopes are aligned substantially in a direction which is opposite to said one kind of slopes.

5 14. An optical film according to claim 12, wherein said adhesive means is a tacky layer.

10 15. An optical film according to claim 12, wherein said inclination angle of each of said optical path changing slopes with respect to said film plane is in a range of from 38 to 45 degrees.

15 16. An optical film according to claim 12, wherein said optical path changing slopes are formed based on a structure of grooves each shaped substantially like an isosceles triangle or any other triangle in section.

20 17. An optical film according to claim 12, wherein said optical path changing slopes are formed based on a structure of grooves or protrusions each shaped substantially like a tetragon or a pentagon in section.

25 18. An optical film according to claim 12, wherein said repetitive prismatic structure further includes flat surfaces each of which is inclined at an inclination angle of not larger

than 5 degrees with respect to said film plane, and wherein
a projected width of each of said flat surfaces onto said film
plane is not smaller than 10 times as large as a projected width
of each of said optical path changing slopes onto said film
5 plane.

19. An optical film according to claim 12, wherein said
prismatic structure is constituted by optical path changing
slopes each inclined at an inclination angle in a range of from
10 38 to 45 degrees with respect to said film plane, and flat surfaces
each inclined at an inclination angle of not larger than 5 degrees
with respect to said film plane and each having a width of each
of said flat surfaces is not smaller than 10 times as large
as a width of each of said optical path changing slopes; and
15 wherein said prismatic structure is constituted by continuous
grooves each of which is shaped substantially like a triangle
in section and each of which is extended from one end of said
film to the other end thereof.

20 20. An optical film according to claim 12, wherein said
prismatic structure including optical path changing slopes is
constituted by discontinuous grooves each shaped substantially
like a polygon such as a triangle, a tetragon or a pentagon
in section; a length of each of said discontinuous grooves is
25 not smaller than 5 times as large as a depth of each of said

discontinuous grooves; wherein said optical path changing slopes are formed in a direction of the length of said grooves at an inclination angle in a range of from 38 to 45 degrees with respect to said film plane; and wherein a projected area of said discontinuous grooves onto an area of said film plane is not larger than 10%.

21. An optical film according to claim 12, wherein a reflection layer is disposed closely on a surface of said film on which said prismatic structure including said optical path changing slopes is formed.

22. An optical film according to claim 12, wherein ridgelines of said optical path changing slopes are parallel to or inclined within an angle range of ± 30 degrees with respect to one side of said transparent film.

23. An optical film according to claim 12, wherein said adhesive means is covered with a strip sheet.

24. An optical film according to claim 12, wherein said adhesive means is of a light diffusion type.

25. A liquid-crystal display device comprising an optical film according to claim 12.

26. An optical film comprising:
a transparent film having an average in-plane retardation
not larger than 30 nm;

an adhesive layer provided on one surface of said
5 transparent film, said adhesive layer having a refractive index
different by 0.12 or less from a refractive index of a layer
of said one surface of said transparent film; and

a repetitive prismatic structure provided on the other
surface of said transparent film, said repetitive prismatic
10 structure having optical path changing slopes aligned in a
substantially constant direction at an inclination angle in
a range of from 35 to 48 degrees with respect to a plane of
said transparent film.

15 27. An optical film according to claim 26, wherein said
optical path changing slopes are constituted by at least two
kinds of slopes in which one kind of slopes aligned in a
substantially constant direction serve as a reference while
the other kind of slopes are aligned substantially in a direction
20 which is opposite to said one kind of slopes; and wherein said
adhesive layer is covered with a strip sheet.

28. An optical film according to claim 26, wherein said
transparent film has an average thicknesswise retardation of
25 not larger than 50 nm.

29. An optical film according to claim 26, wherein said transparent film has an average in-plane retardation of not larger than 20 nm and an average thicknesswise retardation of not larger than 30 nm.

5

30. An optical film according to claim 26, wherein said inclination angle of each of said optical path changing slopes with respect to said film plane is in a range of from 38 to 45 degrees.

10

31. An optical film according to claim 26, wherein said optical path changing slopes are formed based on a structure of grooves each shaped substantially like an isosceles triangle or any other triangle in section.

15

32. An optical film according to claim 26, wherein said optical path changing slopes are formed based on a structure of grooves or protrusions each shaped substantially like a tetragon or a pentagon in section.

20

33. An optical film according to claim 26, wherein a projected area, onto said film plane, of flat surfaces each having an inclination angle of not larger than 5 degrees with respect to said film plane is not smaller than 10 times as large as a projected area, onto said film plane, of slopes each having

25

an inclination angle of not smaller than 35 degrees with respect to said film plane.

34. An optical film according to claim 26, wherein said
5 prismatic structure includes optical path changing slopes each having an inclination angle in a range of from 38 to 45 degrees with respect to said film plane, and flat surfaces each having an inclination angle of not larger than 5 degrees with respect to said film plane; wherein a projected width of each of said
10 flat surfaces onto said film plane is not smaller than 10 times as large as a projected width of each of said optical path changing slopes onto said film plane; and wherein said prismatic structure is formed into continuous grooves each of which is shaped substantially like a triangle in section and each of which is
15 extended from one end of said film to the other end thereof.

35. An optical film according to claim 26, wherein said prismatic structure having optical path changing slopes is formed into discontinuous grooves each shaped substantially
20 like polygon such as a triangle, a tetragon, a pentagon in section; wherein a length of each of said discontinuous grooves is not smaller than five times as large as a depth of each of said discontinuous grooves; wherein said optical path changing slopes are formed in a direction of the length of said grooves
25 at an inclination angle in a range of from 38 to 45 degrees

with respect to said film plane; and wherein a projected area of said discontinuous grooves onto an area of said film plane is not larger than 10%.

5 36. An optical film according to claim 26, wherein a reflection layer is disposed closely on a surface of said film on which said prismatic structure having said optical path changing slopes is formed.

10 37. An optical film according to claim 26, wherein ridgelines of said optical path changing slopes are parallel to or inclined within an angle range of ± 30 degrees with respect to one side of said transparent film.

15 38. An optical film according to claim 26, wherein said adhesive layer is of a light diffusion type.